Amendments to the Specification:

Please amend the following paragraphs as shown.

[0003] This application is a continuation of U.S. Patent Application Serial No. 09/716,236 filed November 21, 2000, now U.S. Patent No. 6,623,389, which in turn claims priority from Italian Patent Application No. T099A001023, filed November 23, 1999.~~, both of which are~~ U.S. Patent No. 6,623,389 is incorporated herein by reference as if fully set forth.

[0017] Reference number 27 indicates an electric actuator, in the form of an electric motor combined with a reduction gear 29, that is directly incorporated in the derailleur 14 to drive the displacement of the second body 17, and consequently also of the rocker arm 24, through the various engagement positions of the chain 3 with the sprockets 11.

[0018] Figure 3 in the enclosed drawings illustrates the motor and reduction gear assembly 27 forming the object of the device described in US-A-5 480 356. In ~~said~~ the Figure, the body of the motor and reduction gear assembly 27, indicated as 28, is shown on a larger scale and in cross-section. The body 28 contains not only the motor 35, but also an epicycloid reduction gear 29 connected to the shaft coming from the electric motor 35. The epicycloid reduction gear 29 drives the rotation of a screw 30. As shown in Figure 2, the body 28 of the motor and reduction gear assembly is attached with an articulated coupling to the body 16 of the derailleur

around an axis 22, while the screw 30 engages a nut screw 31, the body of which is mounted in an articulated manner around an axis 21 on the body 17 of the derailleur. As a result, the motor and gear reduction assembly lies along a diagonal of the parallelogram linkage and the turning of the motor causes a corresponding rotation of the screw 30 by the epicycloid gearing 29, so that the nut screw 31 moves along the screw, leading to an elongation or shortening of the distance between the axes 21 and 22 of the parallelogram linkage.

[0020] The electric power to the motor and reduction gear assembly 27 is provided by means of a battery 37 (Figure 1) conveniently housed in one of the tubes of the bicycle frame 2 or, alternatively, in one side of the handlebar 70, or inside the container of a microprocessor control unit 40 (only partially visible in Figure 1) that may be attached, for instance, to the bicycle frame in the area of the crankset and is used to control the electric motor 35 on the basis of signals originating from two manually-operated control levers 43 and 44 (which could also be replaced by two buttons) associated, in a well-known manner, with a brake lever 41 (Figure 1). The microprocessor unit 40 is also connected to the encoder 32, which detects the angular position of the screw 30, and consequently of the rear derailleur, so as to stop the electric motor when a required transmission gear has been reached, ~~said~~ the gear being selected by manually operating the levers 43 and 44 (which are operated to shift the chain into higher or lower gears, respectively). The connections

between the aforementioned electric components are made, in the case of the above-mentioned well-known solution, by means of wires (not shown in the drawings) conveniently positioned inside the tubes of the bicycle frame 2.

[0023] The purpose of the present invention is to achieve a gear shift device of the type outlined at the beginning of this description, in which the means for detecting the position of the movable body of the gear ~~always guarantee~~ gives a reliable and accurate indication of said position, even in the event of an interruption in the power supply, for instance.

[0029] The absolute transducer may not necessarily be a potentiometer; for instance, it could be a resistive transducer or a transducer of optical or magnetic type, such as a Hall-effect transducer.

[0046] In Figure 4 the parts corresponding to the ones illustrated in Figure 2 are indicated by the same reference number. The general arrangement of the rear derailleur illustrated in Figure 4 is substantially the same as the one illustrated in Figure 2. Here again, the motor and reduction gear assembly has a body 28 articulated at 22 to the first body 16 of the derailleur and controls a screw 30 that engages a nut screw 31 articulated at 21 to the second body 17 of the derailleur. In the case of Figure 4, however, the means for detecting the position of the second body 17 are comprised not of an encoder associated with the motor and gear reduction assembly 27, but of a transducer 50 mounted in line with the articulation

21 of the parallelogram linkage. To be more specific, the transducer 50 is an absolute transducer, i.e. designed to produce an electric output signal indicating the absolute position of the second body 17. In the embodiment of Figure 4, the transducer 50 is comprised of a rotating potentiometer capable of detecting the absolute angular position of the second body 17 with respect to a pin 51 (see Figures 5 and 6) which achieves the articulation of the body 17 on the arm 18 of the parallelogram articulated around the axis 21. ~~Said~~ The pin 51 rotates freely with respect to the body 17 and is rigidly connected to the arm 18 of the parallelogram linkage, so a certain relative rotation of the pin 51 around the body 17 unequivocally corresponds to a certain position of the body 17. As shown in Figures 5 and 6, the transducer 50 includes two circular electric tracks 52, both supported by the body 17 lying coaxially to the axis 21, and a rotating contact 53, that moves with the pin 51 and has two points of contact 54 (see Figure 5) engaged in sliding contact respectively with the two tracks 52. The two tracks 52 are electrically connected by means of a cable 55 to the power supply and the movable contact 53 is used to close the circuit between the two tracks, and any variation in the position of the movable contact 53 gives rise to a variation in the electrical resistance which can be measured, in a well-known manner, in order to produce a signal indicating the absolute position of the movable body 17. The arrangement shown in Figure 6 would be an example of an arrangement that would be possible for use as a

magnetic or optical transducer as well. In such arrangements, the rotation of the contact 53 and pin 51 is either magnetically or optically detected.

[0048] Figure 8 illustrates a further embodiment in which an absolute transducer 56 is used, comprised of a sliding cylinder-type potentiometer. The construction of the potentiometer is schematically illustrated in Figure 9. ~~Said~~ The potentiometer includes a cylinder 57 that contains two electric tracks 58 extending face-to-face, powered by means of a cable 59. Inside the cylinder 57 there is a sliding rod 60 with an element 61 inside the cylinder, rather like a piston, which acts as a movable contact designed to close the circuit by connecting the two tracks 58 together, so that, here again, the electrical resistance of the assembly depends on the position of the rod 60.

[0051] As in the case of the rear derailleur, the position of the movable body 17 is detected, here again, by means of an absolute transducer 50. In the example of Figures 11 and 12, ~~said~~ the transducer 50 is a rotating potentiometer, associated with the articulation 20, and comprising a rotating contact 53 connected to the arm 18 and to the lever 80, sliding over an arched track 52 on the fixed body 16.

[0053] It appears evident from the previous description that the principle lying at the basis of the present invention is that of achieving a motorized gear shift device using a motor directly associated with the derailleur and a transducer for detecting the position of the movable body controlled by the motor, which is a

transducer of absolute type, i.e. designed to produce an output signal indicative of the absolute position of the movable body. Although the achievement of ~~said~~ the transducer in the form of a potentiometer is preferred, any other type of absolute transducer could also be used.

[0054] For instance, optical or even magnetic (e.g. Hall-effect) types of absolute transducer suitable for producing an output signal indicative of the absolute position of the element detected are also well-known. These alternative transducer types may be configured in the same manner that the transducers 50,56 are configured. Further, resistive transducers can be used. In a resistive transducer, the resistance changes in response to the value of the physical quantity being measured. A potentiometer is one kind of resistive transducer.